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NOTE: An advisory opinion adopted by AZBN is an interpretation of what the law requires. While an advisory opinion is not law, it is more than a recommendation. In other words, an advisory opinion is an official opinion of AZBN regarding the practice of nursing as it relates to the functions of nursing. Facility policies may restrict practice further in their setting and/or require additional expectations related to competency, validation, training, and supervision to assure the safety of their patient population and or decrease risk.

Opinion Name:	Testing Guidelines For Pre-licensure Nursing Programs In Arizona
Approved Date:	11/15/2018
Revised Date:	11/2019
Within the Scope of Practice for:	RNs, APRNs, LPNs, CNAs, LNAs
Originating Committee:	Education Committee

ADVISORY OPINION: Testing Guidelines for Pre-Licensure Nursing Programs in Arizona

Arizona Board of Nursing Rule A.A.C. § R4-19-201-(I) (3, 4, 6) (J)

A nursing program shall implement a written plan for the systematic evaluation of the total program that is based on program and student learning outcomes and that incorporates continuous improvement based on the evaluative data. The plan shall include measurable outcome criteria, logical methodology, frequency of evaluation, assignment of responsibility, actual outcomes and actions taken. The following areas shall be evaluated:

I. A nursing program shall develop and implement a written plan for the systematic evaluation of the total program that is based on program and student learning outcomes and that incorporates continuous improvement based on the evaluative data. The plan shall include measurable outcome criteria, logical methodology, frequency of evaluation, assignment of responsibility, actual outcomes and actions taken. The following areas shall be evaluated:

3. Curriculum;
4. Education facilities, resources, and student support services;
6. Student achievement of program educational outcomes;

J. The parent institution shall provide adequate fiscal, human, physical, and learning resources to support program processes and outcomes necessary for compliance with this Article.

STATEMENT OF SCOPE

It is within the Scope of Practice of nursing faculty of academic nursing programs to administer and grade tests to quantify student learning objectives taught in didactic and clinical courses.

I. PURPOSE:

Faculty members teaching in Arizona academic facilities reported a lack of uniform evidence-based testing practices within academic settings resulting in:

- inconsistent and potentially compromised testing environments for students;
- student access to test bank items which compromises test integrity;
- faculty use of unvalidated tests; and
- potential failure to recognize cheating practices.

II. GENERAL GUIDELINES

A. Written Policies and Procedures - Each Nursing Program should address the following:

1. College/University academic dishonesty protocol as required by an accrediting agency
 - a. Cultivate a culture of high academic integrity and ethical standards within the nursing program. [Schwartz, Tatum, & Hageman, 2013]
 - b. Behaviors, processes, and consequences should be delineated by school policies to guide implementation of specific cheating deterrent strategies. [Stonecypher, & Willson, 2014]
2. Testing Policy/Guidelines that include:
 - a. Test Blueprints (addressing - student learning outcomes, Bloom's Taxonomy, NCLEX® Client Needs categories, nursing process, QSEN, CCNE competencies, etc.) [Bristol & Sherrill, 2018; McDonald, 2018]
 - i. Logistics to include standardization requirements for formatting and content; defining student access to blueprints; and a defined % of items by category and the total number of items per exam/course
 - ii. Leveling of test items to include the number of items at each program level, number of application/analysis items, medication calculation items, and number of alternative items (i.e. fill-in-the-blank, hotspot items, rank order, select all that apply, video and/or audio, graphs and charts);
 - b. Test Criteria to include:
 - i. The frequency of repeated use of items and/or reuse of tests (consider replacing no more than 10% of test items with new/untested items)
 - ii. Timing of the Test - (i.e. 1.5 minutes/item; 2-2.5 minutes/item for alternative items; NCLEX® = ~ 0.74 seconds/item). [National Council of State Boards of Nursing, 2018]
 - iii. Test Security [Stonecypher, & Willson, 2014; Medina & Castleberry, 2016; Palmer, et al, 2016] (examples, such as:)
 1. Computerized testing - consider addressing #proctors/#students; rotating questions; rotating tests; use of security screens; browser lockdown; prohibiting the use of personal devices, phones, watches etc.; consider the use of testing software
 2. Paper and Pencil testing - change exams annually, use of seating chart during exam administration; closed exam policy; prohibit the use of phones, watches, and other devices; scantron to support item analysis following exam
 3. Offsite exam - Personal information verification - such as answering personal questions before taking the exam; fingerprinting, facial recognition technology, official student ID capture with real-time photo comparison or other means of

- identification; browser disabling exam proctor software or live proctoring service requiring a camera and other security measures.
- iv. Item Criteria [Tarrant & Ware, 2012; Sutherland, Schwartz, & Dickinson, 2012]
 - 1. Acceptable Alternative item types - (writing styles should reflect standards of NCLEX®). [National Council of State Boards of Nursing, 2016]
 - 2. Piloting of items before scoring/Peer review process (consider running pilot items on a test which are not graded or identified to students) [McDonald, 2018]
 - 3. Use of Online/Publisher Test Bank items (the literature strongly supports excluding the use of these for graded tests; can be used in a class setting or for practice tests)
 - 4. Wording requirements - (Consider standardizing language that is consistent with NCSBN - i.e. parent rather than mother/father; client rather than patient, etc.). [National Council of State Boards of Nursing, 2016]
 - v. Test Environment [Oermann & Gaberson, 2016]
 - 1. Address if answering students' questions during the examination is acceptable or not [Stillwell & Krautscheid, 2016]
 - 2. Proctoring criteria for both paper/pencil & computerized (# of proctors/# students)
 - 3. Educating students and faculty on what delineates cheating [Stonecypher & Willson, 2014]
 - vi. Post-Test Analysis Criteria
 - 1. Item Rationale - every item has a written rationale and a reference validating the best answer
 - 2. Item Analysis [Billings & Halstead, 2015; McDonald, 2018; Bristol & Sherrill, 2018]
 - a. Components & Ranges:
 - i. KR20 - ($\geq .70$ for teacher-made exams)
 - ii. Mean, median, mode
 - iii. P-Value (0.3-0.8)
 - iv. IDR - ($\geq 25\%$)
 - v. Point Biserial Index (PBI) - ($\geq .25$)
 - b. Item Review Criteria - (i.e. how to address poor item analysis)
 - c. In the event, an item performs poorly, consider accepting two answers or nullifying or eliminating the items and the impact on student performance.
 - 3. Test Review - Consider establishing a standard to either allow exam review or not - consider reviewing content in general, not specific items [Tinnon, 2018; Spencer, 2018]
 - 4. Student Remediation - Consider the use of practices if failing or low score; review of materials; use of learning contracts

- B. Program Testing Committee - Each nursing program should establish this committee separate from the curriculum committee to address testing protocols and to educate and provide guidance for nursing faculty. [Nibert, 2015]
1. Include both novice and expert educators
 2. Define the scope of work to include training/mentoring, education on evidence-based practices

III. REFERENCES

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- National Council of State Boards of Nursing, (2018). *NCLEX® Examination candidate bulletin*. Retrieved from www.ncsbn.org.
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- Nibert, A. (2015). *Building testing committees that have authority to create effective change*. Examsoft Webinar, January 20, 2015. Retrieved from: <https://www.youtube.com>.
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- Palmer, J. Bultas, M., Davis, R., Schmuke, A., Fender, J. (2016). Nursing examinations: Promotion of integrity and prevention of cheating, *Nurse Educator*, 41(4):180-184.
- Schwartz, B., Tatum, H., & Hageman, M. (2013). College students' perceptions of and responses to cheating at traditional, modified, and non-honor system Institutions. *Ethics & Behavior*, 23(6): 463-476.

- Spencer, C. (2017). Postexamination reviews: A faculty inquiry. *Teaching and Learning in Nursing*, 12(2017): 304-306.
- Stillwell, S. & Krautscheid, L. (2016). Answering students questions during examinations: A descriptive study of faculty beliefs. *Nursing Education Perspectives*, 37(3): 168-170.
- Stonecypher, K. & Willson, P. (2014). Academic policies and practices to deter cheating in nursing education. *Nursing Education Perspectives*, 35(3): 167-179.
- Sutherland, K., Schwartz, J., & Dickinson, P. (2012). Best practices for writing test items. *Journal of Nursing Regulation*, 3(2): 35-39.
- Tarrant, M. & Ware, J. (2012). A framework for improving the quality of multiple-choice assessments. *Nurse Educator*, (17)3: 98-104.
- Teclehaimanot, B., You, J., Franz, D. R., Xiao, M., & Hochberg, S.A. (2018). Ensuring academic integrity in online courses: A case analysis in three testing environments. *The Quarterly Review of Distance Education*, 12(1):47-52.
- Tinnon, E. (2018). Reflective test review: The first step in student retention. *Teaching and Learning in Nursing*, 13(2018): 31-34.

IV. Annotated Bibliography & Abstracts

- Alessio, H. M., Malay, N., Maurer, K., Bailer, A. J., & Rubin, B. (2018). Interaction of proctoring and student major online test performance. *International Review of Research in Open and Distributed Learning*, 19(5).

Research was conducted to address concerns regarding academic integrity and actual instances of academic dishonesty. The results indicate that the use of proctoring software resulted in lower scores, short testing times, and less variation in performance, which implies higher academic integrity among test takers

- Billings, D. & Halstead, J. (2015). *Teaching in nursing: A guide for faculty* (5th ed.). St. Louis, MO: Elsevier.

This book provides specific detail on constructing and analyzing faculty written exams. It describes the meanings of the statistics and values attributed to item analysis and provides a template for a useful grid to capture exam analytics. This book is in its 5th edition and remains a standard work for nursing education.

- Bristol, T. (2017). Test and examination security technology. *Teaching and Learning in Nursing*, 12(2017): 320-322.

Dr. Bristol discusses a move toward Web-based or remote assessments in nursing education and some of the current best practices for increasing exam security with the use of technology. Thoughtful security for exams would included randomization of questions, passwords, biometric scans, webcam based proctoring, pattern recognition, and LockDown browser. He also presents the need for policies to be in place that support security, and presents examples.

- Bristol, T. & Sherrill, K. (2018). *NurseThink for nurse educators success manual*. Waconia, MN, NurseTim, Inc.

In a clear, simple format, this book provides an overview of assessment and evaluation, including blueprinting, item writing, and analysis. Examples and tools are

included to make the transition into the faculty role easier. This is an excellent resource to use as a first step for those just entering this realm.

Bristol, T., Nelson, J., Sherrill, K., & Wangerin, V. (2017). Current state of test development, administration, and analysis. *Nurse Educator*, 43(2): 68-74.

Developing valid and reliable test items is a critical skill for nursing faculty. This research analyzed the test item writing practice of 674 nursing faculty. Relationships between faculty characteristics and their test item writing practices were analyzed. Findings reveal variability in practice and a gap in the implementation of evidence-based standards when developing and evaluating teacher-made examinations.

Daffin, Jr., L.W., & Jones, A.A. (2018). Comparing student performance on proctored and non-proctored exams in online psychology courses. *Online Learning*, 22(1), 131-145. doi:10.24059/olj.v22i1.1079

Researchers examined the academic integrity of online students during testing that expanded upon and confirmed findings from Hylton et al (2015). The study is the largest and longest to date with a student sample of 1700 conducted over two years (4 semesters). Results indicated that a student who performed poorly on a proctored exam in turn scored higher, and took twice as long to complete, when tested in a non proctored environment during same course.

Hylton, K., Levy, Y., & Dringus, L. P. (2015).[\[1\]](#) [\[2\]](#) Utilizing webcam-based proctoring to deter misconduct in online exams. *Computers & Education*, 92-92 (2016), 53-63

Research was conducted to investigate the deterrent effect of webcam-based proctoring on misconduct during online examinations. There was statistically significant differences in the amount of time needed to complete the exams between the proctored, and non-proctored groups, indicating that webcam-based proctoring is a deterrent to academic misconduct.

Karim, M. N., Kaminsky, S. E., & Behrend, T. S. (2014). Cheating, reactions, and performance in remotely proctored testing: An exploratory experimental study. *Journal of Business Psychology*, 29 (2014): 555-572

This manuscript reports on research conducted to examine whether technology is effective at decreasing cheating and if there are unintended effects on test-takers. As with most research, there are indications for further research and development of theory to be tested. The findings from this study show that cheating may be decreased, there is not an effect on test performance, but there is increased pressure on students, as well as privacy concerns.

McDonald, M. (2018). *The nurse educator's guide to assessing learning outcomes* (5th ed.). Brooklyn, NY: Jones & Bartlett.

If *NurseThink for Nurse Educators Success Manual* is the first step, Mary McDonald's book is the graduate course on course objectives, test development, exam construction, analysis, scoring, and accruing longitudinal data for items and examinations. This book will provide resources for those who want to take test writing to the next level or have specific questions to be answered.

Medina, M. & Castleberry, A. (2016). Proctoring strategies for computer-based and paper-based tests, *American Journal of Health-System Pharmacy*, 1(73): 274-277.

Although the creation, delivery, and proctoring of computer-based and paper-based testing are similar, additional procedures must be standardized and implemented when using computer-based exams to maintain academic integrity. It is important that testing environments ensure academic integrity without implying a mistrust of students.

Morrison, S., Nibert, A., & Flick, J. (2006). *Critical thinking and test item writing* (2nd. ed). Houston, TX: Health Education Systems, Inc.

This resource provides quick and easy guidelines for all aspects of exam design. The expert authors of this book are testing specialists with Health Education Systems, Inc. (HESI). Although out of print, this book is an excellent resource.

National Council of State Boards of Nursing, (2018). *NCLEX® examination candidate bulletin*. Retrieved from www.ncsbn.org.

This bulletin provides answers to frequently asked questions regarding the NCLEX. Some portions are in reference to development and scoring of the exam. Other sections of the bulletin address the logistics of administration, registering, scheduling, and actually taking the exam. It answers questions for faculty and students.

National Council of State Boards of Nursing, (2016). *NCLEX-RN® detailed test plan: Item writer/item reviewer/nurse educator version*. Retrieved from www.ncsbn.org.

The NCSBN publishes the blueprint for the NCLEX-RN in the form of the *NCLEX-RN® Detailed Test Plan: Item Writer/Item Reviewer/Nurse Educator Version* every three years to reflect changes resulting from the Practice Analysis. The detailed test plan is useful for faculty as they balance priorities in their courses and this resource is accessible to all. Students may access this version, or the candidate version, as they enter their programs and complete their programs, in preparation for the NCLEX-RN. When students ask for a study guide, this IS the study guide for the exam!

Nibert, A. (2015). *Building testing committees that have authority to create effective change*. Examsoft Webinar, January 20, 2015. Retrieved from: <https://www.youtube.com>

This 1-hour webinar focuses on how to build a nursing program testing committee that can lead the development and integration of testing policies and best practice standards. The practical and logical processes outlined in this video will get any program's testing committee up and moving quickly.

Oermann, M. & Gaberson, K. (2016). *Evaluating and testing in nursing education*. (5th ed.). New York, NY: Springer.

This book is another standard work for nurse educators, providing consistent information on developing and administering examinations. It provides rationales, guidelines, and examples for constructing and analyzing exams. It explains the psychometrics of exam analysis and provides evidence for making informed decisions.

Palmer, J. Bultas, M., Davis, R., Schmuke, A., Fender, J. (2016). Nursing examinations: Promotion of integrity and prevention of cheating, *Nurse Educator*, 41(4):180-184.

Academic integrity is a concern in higher education. The authors describe the findings of a nursing faculty task force developed with the goal of reducing incidents of cheating on classroom examinations in a school of nursing. Following a review of the literature, a modified Delphi technique was used to prioritize the suggested strategies into recommendations for faculty to follow. The findings and commendations from the task force are presented and serve as a guide for nursing faculty in implementing measures to promote academic integrity during classroom examinations.

Schwartz, B., Tatum, H., & Hageman, M. (2013). College students' perceptions of and responses to cheating at traditional, modified, and non-honor system institutions. *Ethics & Behavior*, 23(6): 463-476.

To address growing concerns about academic integrity, college students (n = 758) at honor system and non-honor system institutions were presented with eight scenarios to determine the influence of an honor system on their perceptions of and responses to academic dishonesty. Many effects for honor code status emerged. Students from traditional honor system schools considered the behaviors to be more dishonest and were more likely to respond that they would report the incident when compared to students attending modified and non-honor system institutions. Findings suggest traditional honor systems, with specific rules and regulations in place, are more effective at cultivating academic integrity among students; modified honor systems may not be as effective as previous research suggests.

Spencer, C. (2017). Postexamination reviews: A faculty inquiry. *Teaching and Learning in Nursing* 12(2017): 304-306.

Examinations are a main source of evaluation in nursing programs. Performances on examinations determine retention, progression, and graduation. These examinations require decision making skills that nursing students need time and practice to develop. A postexamination review can help nursing students better understand the content and make good decisions. Postexamination reviews also allow for students to get feedback on their performance and guidance for higher-level thinking.

Stillwell, S. & Krautscheid, L. (2016). Answering students questions during examinations: A descriptive study of faculty beliefs. *Nursing Education Perspectives*, (37)3: 168-170.

Examinations are used to evaluate individual student learning. Therefore, fair and consistent administration practices are essential. One issue associated with testing administration practices includes whether or not students should be allowed to ask questions during exams and how faculty should respond. Findings from this descriptive study indicate that faculty believe answering questions disrupts the testing environment, inhibits effective monitoring of the testing environment, and could provide unfair hints to students who ask questions. Yet, faculty permit students to ask questions to clarify unclear wording, to provide definitions, and to appear receptive to student needs. Recommendations for nursing education and the accompanying research are provided.

Stonecypher, K., & Willson, P. (2014). Academic policies and practices to deter cheating in nursing education. *Nursing Education Perspectives*, 35(3): 167-179.

This systematic literature review assesses the evidence available to facilitate nursing faculty in policy development and implementation of strategies to deter cheating. Forty-three articles met the criteria; a matrix table lists specific faculty action plans and deterrent

strategies by category of misconduct for each publication. It is suggested that clearly defined behaviors, processes, and consequences should be delineated by school policies to guide implementation of specific cheating deterrent strategies.

Sutherland, K., Schwartz, J., & Dickinson, P. (2012). Best practices for writing test items. *Journal of Nursing Regulation* 3(2): 35-39.

This article enhances the current literature's guidance for those interested in developing, assessing, or utilizing items to test competency in nursing. It does so by underlining the purpose of a test item and deriving four item-writing principles from that central purpose. Within the framework provided by these four principles, this article suggests some effective methods for devising nursing test items that remain faithful to the central purpose of assessing proficiency.

Tarrant, M. & Ware, J. (2012). A framework for improving the quality of multiple-choice assessments. *Nurse Educator*, 17(3): 98-104.

Multiple-choice questions are frequently used in high-stakes nursing assessments. Many nurse educators, however, lack the necessary knowledge and training to develop these tests. The authors discuss test development guidelines to help nurse educators produce valid and reliable multiple-choice assessments.

Teclehaimanot, B., You, J., Franz, D. R., Xiao, M., & Hochberg, S.A. (2018). Ensuring academic integrity in online courses: A case analysis in three testing environments. *The Quarterly Review of Distance Education*, 12(1):47-52

The purpose of this study was to compare remote testing systems for differences in test scores and student grades. The results show that there could be a decrease in standard deviation of examination scores and that other options may need to be explored. Offsite high-stakes testing due to unavoidable constraints (such as cost, time to travel, and schedule), should include streaming audio and video technology.

Tinnon, E. (2018). Reflective test review: The first step in student retention. *Teaching and Learning in Nursing*, 13(2018): 31-34.

Test review is an often overlooked strategy for student retention. The purpose of this manuscript is to provide the reader with a step-by-step process of the reflective test review method. Test review is an opportunity for students to review and reflect on their thought processes during the examination and to improve understanding and future decision making. Students have indicated that this method was instrumental in successfully completing the course and, ultimately, graduating.